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**I-15100 Alessandria(IT)**

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Inventor: **Battegazzore, Piero**  
**Via G.Galilei 74**  
**I-15100 Alessandria(IT)**

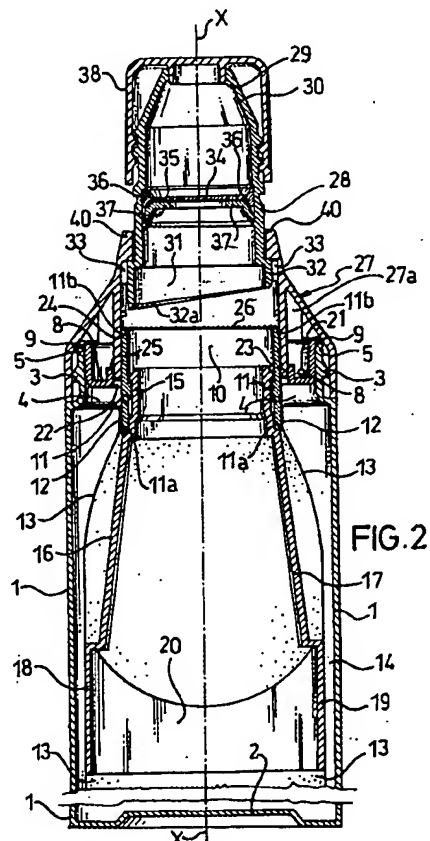
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Representative: **Vannini, Torquato et al**  
**JACOBACCI-CASETTA & PERANI S.p.A.,**  
**Via Visconti di Modrone 7**  
**I-20122 Milano (IT)**

Applicant: **GUALA S.p.A.**  
**Corso Romita, 79**

**A squeezable dispenser for viscous products, in particular for food products.**

A dispenser for viscous products including an outer container (1) with at least one resiliently deformable lateral wall (6,7), its bottom (2) being closed and its top (3) having an aperture (4) defined by a rim (5), a flexible sack (13) arranged within the outer container (1), the sack (13) having a mouth (12) and being intended to contain the viscous product, a plate element (8) arranged across the aperture (4), this plate element (8) having an axial passage (10) provided with a collar (11) having one edge (11a) facing into the outer container and one edge (11b) facing outwardly thereof, the sack (13) being sealed to the collar (11) around its mouth (12). A film (26) is sealed to the edge (11b) of the collar so as to close the sack (13) hermetically after it has been filled. A delivery duct (28) is slidable axially between a first position in which its end (32) is spaced from the film (26) and a second position in which it is coaxially within the axial passage (10) in the collar (11) after the film (26) has been cut.



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The present invention relates to a dispenser for viscous products such as, for example, juices or edible creams in which the container is pressed resiliently to deliver the product and released in order to stop the delivery.

In particular, the invention relates to a dispenser of viscous products including an outer container extending along a longitudinal axis which is generally arranged vertically, having at least one lateral wall which is resiliently deformable, its bottom being closed and its top having an aperture defined by a peripheral rim, a flexible sack arranged inside the outer container, the sack having a mouth and being intended to contain the viscous product, a plate element arranged across the aperture at the top of the container and fixed to the peripheral rim thereof, the plate element having an axial passage parallel to the longitudinal axis of the outer container and provided with a collar having one edge facing into the outer container and one edge facing outwardly thereof, the sack being sealed to the collar around its mouth, a head having an internal delivery duct for the viscous product, provided at one end with an outlet orifice and at its opposite end with an inlet orifice aligned with the axial passage through the plate element, the head being fixable to the top of the outer container, a first one-way valve member arranged in the viscous-product delivery duct to open towards the delivery orifice, and a second one-way valve member opening towards the interior of the outer container.

Dispensers of the type described above are illustrated and described, for example, in the United States Patents No. 4,469,250, No. 4,909,416 and No. 4,842,165.

However these may not properly be used for food products since they do not provide for air-tight sealing of the mouth of the sack inside the container and therefore are unable to give the product a sufficiently long shelf life before unacceptable alteration sets in.

The object of the present invention is to provide a dispenser of the type described above which allows the mouth of the sack to be sealed hermetically after the sack has been filled and which is provided with means for opening the said mouth when the dispenser is used for the first time. This object is achieved by a dispenser according to the claims which will follow.

The invention will now be described in greater detail with reference to a preferred embodiment, given purely by way of non-limitative example and illustrated in the appended drawings, in which:

Figure 1 is a partially sectioned perspective view of the dispenser according to the invention; Figure 2 is a longitudinal section of the dispenser of Figure 1 in a sealed condition;

Figure 3 is a section like that of Figure 2 but with the dispenser no longer sealed; and

Figure 4 is a section taken on the line IV-IV of Figure 3.

With reference to the drawings, an outer container 1 is made of plastics material, for example, a polyolefin.

The container 1 is substantially elliptical in plan and has a closed bottom 2 which serves as a support base and a top 3 with an aperture 4 defined by a rim 5.

The container 1 extends along a longitudinal axis X-X, which is generally arranged vertically, and at least one of its walls 6 and 7, with a greater radius of curvature, is resiliently deformable when pressed from the exterior, for example by the fingers of a user's hand.

A plate element 8, also of plastics material, extends across the aperture 4 and is fixed by its peripheral edge 9 to the rim 5 defining the aperture 4.

This plate element 8 has a passage 10, coaxial with the axis X-X, around which is fixed a coaxial collar 11 which has one edge 11a facing inwardly of the container 1 and the other edge 11b facing outwardly.

The mouth 12 of a flexible sack for containing the product to be delivered, for example tomato paste, is fixed, for example by sealing, to the outer surface of the collar 11. The sack 13 is generally made of laminated film, of which the inner layer is of a heat-sealable material compatible with that of the collar 11.

The circumference of the sack 13 is such that, once it has been filled with the viscous product to be dispensed and is distended to its maximum size, there is an interspace 14 between the sack and the wall of the outer container 1.

A support 15 is also fixed to the plate element 8 and, in the embodiment illustrated, is in the form of an annular element coaxial with the collar 11 and fixed to its inner wall. A pair of resiliently divergent opposed legs 16, 17 extend from the support 15 into the sack 13 with their ends 18, 19 pressing like a spreader against the sack 13 to distend it towards the outer container 1, the legs maintaining the sack under tension, from the inside towards the outside, even as the sack empties as a result of the product being delivered.

The divergent force exerted by the legs 16, 17 is applied to the sack 13 in a peripheral zone substantially halfway along the longitudinal extent of the container 1 and in a direction substantially perpendicular to the axis X-X.

The ends 18, 19 of the legs 16, 17, which may conveniently be made of polyolefin or polyamide plastics material, are each shaped as an arcuate sector with a radius of curvature matching that of

the respective facing wall of the container 1 and each extends upwardly through a predetermined distance parallel to the axis X-X. The legs may also be connected by an annular element 20.

As seen in Figures 2 and 3 in particular, one-way valve members are also fixed to the plate element 8 and are provided to allow air to flow into the container 1 from the external environment as a result of the suction created by the resilient return of the walls of the container 1 on completion of a delivery of the product.

These valve means are schematically indicated 21 and may, for example, be of the type described in the European Patent Application No. 92105510.9.

The plate element 8 also has holes 22 around the collar 11 for putting the space 14 between the sack 13 and the container 1 in communication with the atmosphere during filling of the sack.

The holes 22 are then sealed by the end 23 of a tubular element 24 which is housed in the annular groove formed between a rib 25 of the plate element 8 and the outer surface of the collar 11.

On the edge 11b of the collar 11 is a hermetic sealing film 26 of a material which is highly impermeable to gas, for example of the same type as the material of the sack 13, this film 26 being sealed, in a conventional manner, right round the edge 11b after the sack 13 has been filled.

The dispenser according to the invention also has a head, generally indicated 27, snap-engaged with the top 3 of the container 1. The head includes within it the tubular element 24 and a delivery duct 28 provided with a delivery orifice 29 at one end 30 and with an inlet orifice 31 at its opposite end 32.

The delivery duct 28 is slidable in the head 27 and is guided for axial movement in the tubular element 24 by radial guide projections 33 which centre the end 32 within the axial passage 10 through the plate element 8. This end 32 is cut at an oblique angle to the axis X-X and has a cutting edge 32a.

The delivery duct 28 is movable axially from a first position, shown in Figures 1 and 2, in which the cutting edge 32a is spaced from the sealing film 26, to a second position, shown in Figure 3, in which the end 32 lies coaxially within the collar 11 providing a radial seal and the cutting edge 32a has pierced the film 26.

In this second position, determined by the abutment of the guide projections 33 with the edge 11b of the collar 11, the inlet orifice 31 is in communication with the axial passage 10 in the plate element 8, thereby permitting delivery of the product contained in the sack 13.

Upstream of the delivery orifice 29, the delivery duct 28 is provided with a one-way valve member which opens towards the delivery orifice itself. This valve member comprises a disc 34 made, for ex-

ample, of polypropylene and pivotable about a point 35 at which it is connected to a ring 36 which bears sealingly against a circular crown 37 on which the disc rests in its sealing position.

The dimensions of the hinge point 35 are adapted so as to keep the disc 34 in its closed position under rest conditions.

Finally, the head 27 includes a conventional screw cap 38 with a projection 39 for closing the delivery orifice 29.

A conventional security tear strip 41 with a grip tab 42 is arranged between the cap 38 and the top 40 of the head 27. The axial extent of the strip 41 is such as to maintain the delivery duct 28 in its raised position and thus ensures the integrity of the sealing film 26 and hence the hermetic sealing of the sack 13 containing the product to be dispensed.

It should be noted that the dispenser according to the invention ensures that the product is maintained in a good condition for a lengthy period before it is first opened. The product is in fact contained entirely within the heat-sealed laminated films 13, 26, which are highly impermeable to gases and within a small section of the plastics material of the collar 11 which also ensures a high impermeability due to its considerable thickness.

It should also be noted that the environment containing the product has no movable couplings between separate parts which always create problems in ensuring an effective air-tight seal and maintaining this over a period of time.

The operation of the dispenser according to the invention is clear from the preceding description: after the security strip 41 has been removed, the delivery duct 28 is moved axially until the guide projections 33 bear against the edge 11b of the collar 11. During this movement, the sealing film 26 is cut by the cutting edge 32a and the end 32 of the delivery duct 28 is inserted coaxially into the collar 11 to form a seal.

In this way continuity is provided between the passage 10 and the inlet orifice of the duct 28. After the screw cap 38 has been removed, the dispenser is ready to deliver the product. This is done in a conventional manner by the application of pressure to the resilient walls 6, 7. This compresses the sack 13 and the pair of resilient spreader legs 16 and 17.

In this way a specific quantity of creamy product is pushed past the one-way valve 34, which opens, to the delivery orifice 29.

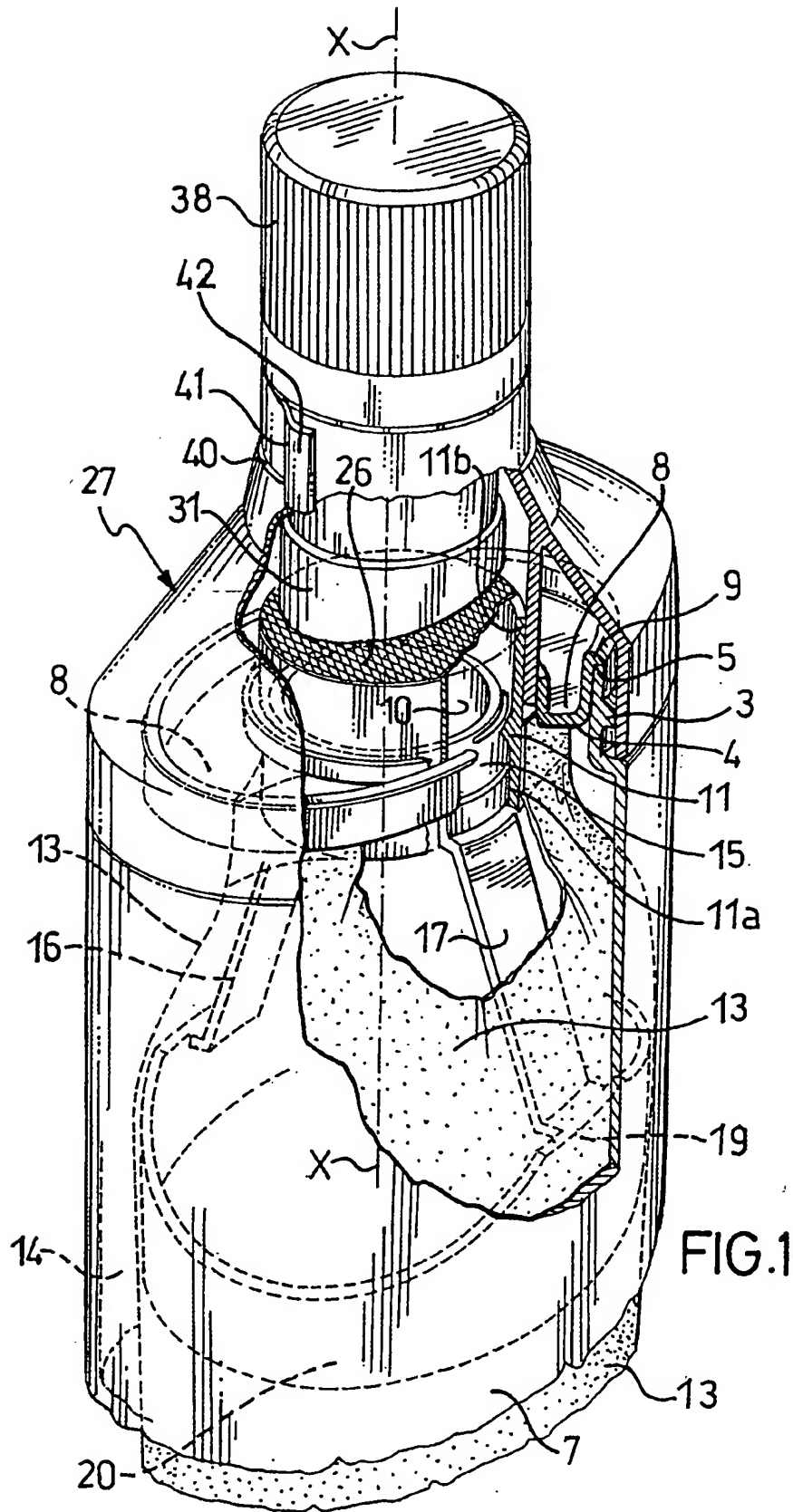
When the pressure on the walls 6, 7 of the container 1 is released and they return to their normal positions, the pair of spreader legs 16 and 17 exert a lateral thrust against the inside of the sack 13 and return it under tension to the maximum diameter allowed by the transverse dimen-

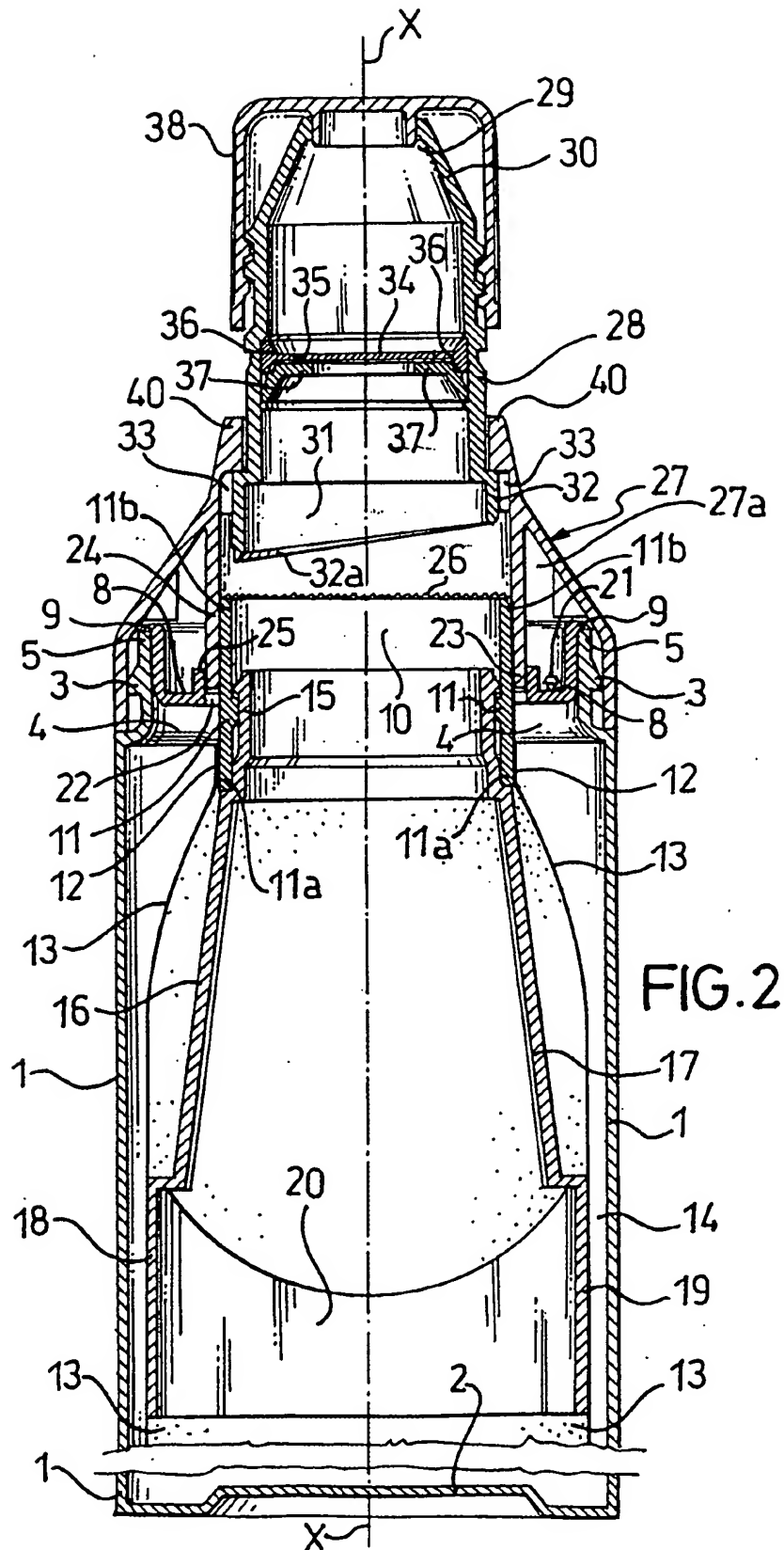
sions of the sack 13 itself without coming into contact with the inner surfaces of the walls 6 and 7 of the container 1.

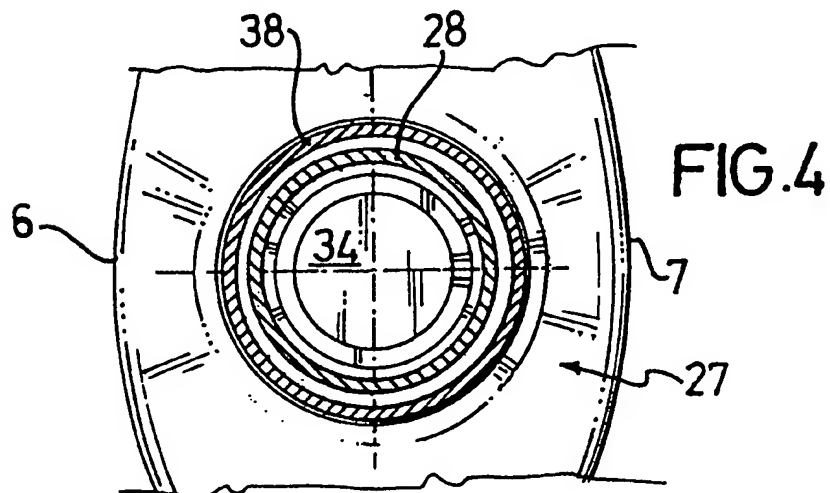
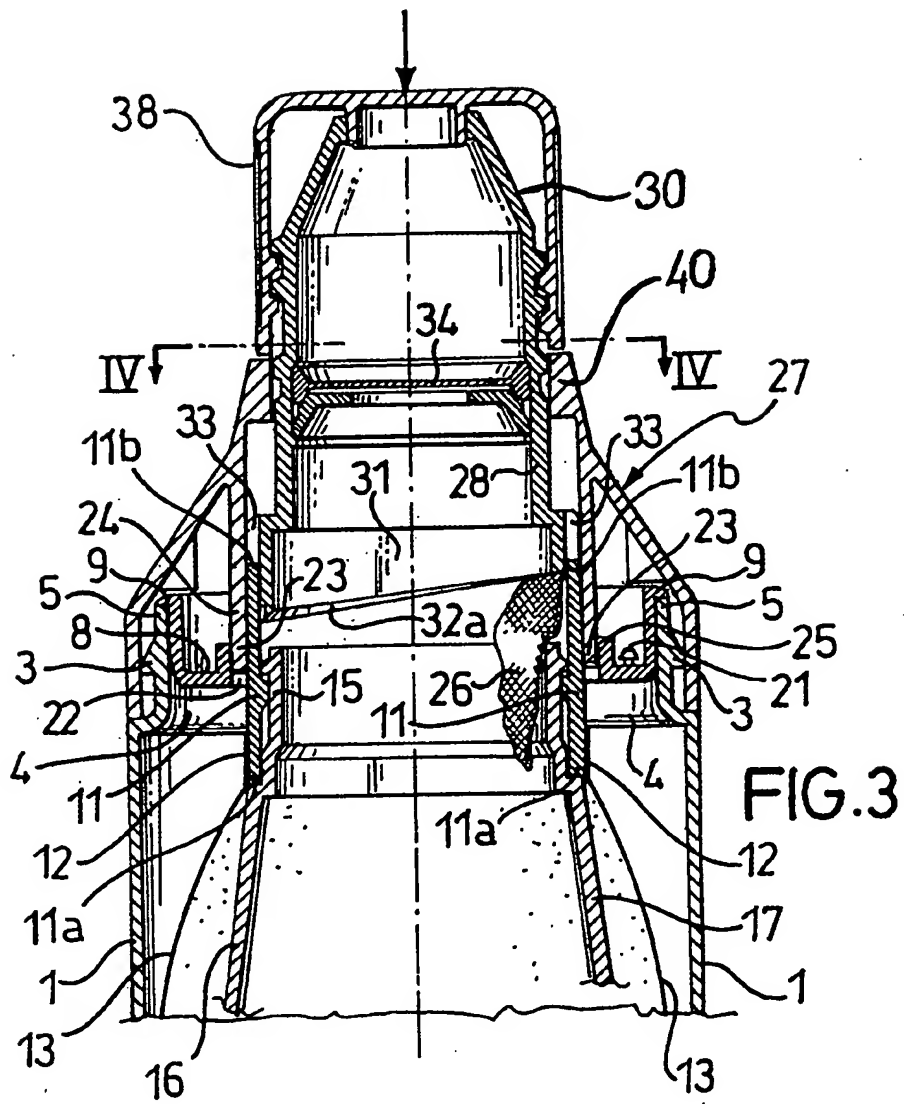
At the same time, while the disc 34 closes against the support ring 36, the valve 21 allows air present in the cavity 27a of the head 27, which is not sealed along its outer periphery, to enter the container 1 and to reach even the region below the sack 13, through the space 14.

#### Claims

1. A dispenser of viscous products including an outer container (1), extending along a longitudinal axis (X-X) which is generally arranged vertically, having at least one lateral wall (6, 7) which is resiliently deformable, its bottom (2) being closed and its top (3) having an aperture (4) defined by a peripheral rim (5), a flexible sack (13) arranged inside the outer container (1), the sack having a mouth (12) and being intended to contain the viscous product, a plate element (8) arranged across the aperture (4) at the top of the container (1) and fixed to the peripheral rim (5) thereof, the plate element (8) having an axial passage (10) parallel to the longitudinal axis (X-X) of the outer container (1) and provided with a collar (11) having one edge (11a) facing into the outer container and one edge (11b) facing outwardly thereof, the sack (13) being sealed to the collar (11) around its mouth (12), a head (27) having an internal delivery duct (28) for the viscous product provided at one end (30) with an outlet orifice (29) and at its opposite end (32) with an inlet orifice (31) aligned with the axial passage (10) through the plate element (8), the head (27) being fixable to the top of the outer container (1), a first one-way valve member (34) arranged in the viscous-product delivery duct (28) to open towards the delivery orifice (29), and a second one-way valve member (21) opening towards the interior of the outer container (1), characterised in that a sealing film (26) is fixed to the edge (11b) of the collar (11) and the delivery duct (28) is slidable axially with respect to the head (27) between a first position in which the end (32) with the inlet orifice (31) is spaced from the film (26) and a second position in which the said end (32) is coaxially within the axial passage (10) in the collar (11), removable means (41) being provided for maintaining the delivery duct (28) in its first position.
2. A dispenser according to Claim 1, characterised in that the delivery duct (28) is provided with a screw cap (38) for closing and opening the outlet orifice (29).
3. A dispenser according to Claims 1 and 2, characterised in that the removable means for maintaining the delivery duct in its first position are constituted by a security strip (41) inserted between the screw cap (38) and the opposing free edge (40) of the head (27).
4. A dispenser according to Claims 1 to 3, characterised in that the said end (32) of the delivery duct provided with the inlet orifice (31) is cut at an oblique angle to the longitudinal axis X-X and has a cutting edge (32a).
5. A dispenser according to Claims 1 to 4, characterised in that the delivery duct (28) is slidable axially within a tubular guide element (24) fixed to the head (27) with the interposition of radial guide projections (33) which bear axially against the edge (11b) of the collar when the delivery duct (28) is in its second position coaxially within the collar (11).









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# EUROPEAN SEARCH REPORT

Application Number

DOCUMENTS CONSIDERED TO BE RELEVANT			EP 93202323.7
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. 5)
X	EP - A - 0 304 972 (LYNES HOLDING S.P.) * Totality *	1-4	B 65 D 47/36
A	EP - A - 0 326 641 (ADIMPLAST) * Totality *	1-3	
A	EP - A - 0 471 629 (CEBAL) * Fig. 2,3 *	5	
			TECHNICAL FIELDS SEARCHED (Int. Cl. 5)
			B 65 D 47/00 B 65 D 51/00 B 65 D 17/00
The present search report has been drawn up for all claims			
Place of search VIENNA		Date of completion of the search 13-12-1993	Examiner NIMMERRICHTER
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

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